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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/052,921      | 11/09/2001  | Chunzeng Li          | 528.001             | 1030             |

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EXAMINER

OLSEN, KAJ K

ART UNIT

PAPER NUMBER

1753

DATE MAILED: 09/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                               |                           |  |
|------------------------------|-------------------------------|---------------------------|--|
| <b>Office Action Summary</b> | Application No.<br>10/052,921 | Applicant(s)<br>LI ET AL. |  |
|                              | Examiner<br>Kaj K Olsen       | Art Unit<br>1753          |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 21 June 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 1-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 26-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>6-26-02</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of group II in the reply filed on 6-21-04 is acknowledged. Applicant traverses the requirement on the grounds that the apparatus of claim 26 is also operated in a polar solution. However, claim 26 only specifies the presence of a sample support "that accommodates a sample immersed in a polar solution", which does not appear to actually claiming a sample in a polar solution, but rather a sample support that could accommodate a polar solution (i.e. the polar solution is the intended use of the apparatus). Applicant also urges that group I does not preclude the use of the probe in an STM mode. The examiner would agree, but this point would appear to be irrelevant. Group I is currently not drawn to an STM measurement (i.e. there is no measurement of a tunneling current) while the structure of group II reads on an STM device. Hence the examiner has established that the apparatus could be utilized to practice another materially different process as set forth by MPEP 806.05(e). The requirement is still deemed proper and is therefore made FINAL.

### ***Priority***

2. The examiner is confused by applicant's priority claim in the filed Declaration. In particular, applicant claims priority to application 09/855,960 (now US Patent 6,530,268). However, these two applications have no common inventor or inventors. The current application lists inventors Li and Kjoller while the (then) copending application only lists James Massie. Priority requires at least some overlapping inventorship, which the instant invention and patented invention do not have. Moreover, a review of the specification for each invention demonstrates almost no overlapping subject matter. In particular, the instant invention is drawn to potential

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measurements with scanning probes, but the patented invention does not appear to have anything drawn to that. Because it appears that the applicant's priority claim cannot be granted for the reasons set forth above, the examiner recommends the applicant file a new Oath or Declaration removing all claim of priority to application number 09/855,190.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 26, 27 and 29-35 are rejected under 35 U.S.C. 102(b) as being anticipated by Horrocks et al (J. Chem. Faraday Trans., 1998, 94(8), pp. 1115-1118).

5. Horrocks discloses a scanning electrochemical potential microscope that comprises a sample support (a gold microdisc) that accommodates a sample of urease in a polar solution of water. Horrocks discloses a probe having a tip including a distal end disposed a perpendicular distance from the surface and a potential measuring device electrically coupled to the tip that measures a potential. See fig. 1 and Introduction. With respect to the formation of a potential gradient, it is only necessary for the structure of Horrocks to be capable of supporting a potential gradient, which the structure of Horrocks would clearly be capable of doing. In addition, it appears that fig. 2 and 3 evidence that a potential gradient has been established between the sample and the tip.

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6. With respect to the scanning actuator, fig. 3 demonstrates the presence of control of the relative movement between probe and sample, which would read on “scanning actuator” and “Z-actuator” giving the claim language its broadest reasonable interpretation.
7. With respect to the structure drawn to the use of feedback and tuning, see the discussion of the bi-potentiostat on p. 1116. Whether or not the bi-potentiostat is utilized for the specified tuning or feedback functions is the intended use of the bi-potentiostat and the intended use need not be given further due consideration in determining patentability.
8. With respect to how the Z-actuator translates Z-position of the tip, that is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability.
9. With respect to the formation of the electrical double layer, that is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability. However, it would appear that electric double layers are an inherent result of any potential differences across electrodes.

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Horrocks in view of Kwak et al (USP 5,202,004).

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12. Horrocks set forth all the limitations of the claim, but did not explicitly recite the presence of a piezoelectric actuator. Kwak discloses in an alternate scanning electrochemical microscope the use of a piezoelectric actuator for the control of the z-directions. The piezoelectric element allows for angstrom level control of motion. See col. 2, line 59 through col. 3, line 15. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Kwak for the microscope of Horrocks in order to provide angstrom level control of the scanning tip motion.

### ***Conclusion***

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Wei et al and Gyurcsanyi et al are alternate scanning electrochemical microscopes that specify the use of a potential measurement. Denuault et al is a review article about the use of potential measurements with scanning electrochemical microscopy.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaj Olsen whose telephone number is (571) 272-1344. The examiner can normally be reached on Monday through Thursday from 5:30 A.M. to 3:00 P.M. and on alternate Fridays.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen, can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

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may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AU 1753  
August 31, 2004



**KAJ K. OLSEN**  
**PRIMARY EXAMINER**